Claims

What is claimed is:

1. A method ~~and process~~ for array shape inferencing for an array-based language ~~such as MATLAB.~~

2. The method enables a compact representation of shape at compile time.

3. The highlights of the method are its generality and uniformity.

4. The representation facilitates program-wide shape inferencing by forward composing the individual shape-tuples.

5. The representation does not depend upon any compile-time overestimate of shape.

6. The representation exactly captures the shape that the MATLAB expression assumes at run time, even when program variables may be unknown at compile time.

7. Unlike the current state-of-the-art (i.e., the shadow variable scheme) the representation does not obscure important shape information even when the array extents are not known at compile time.

8. The framework exposes useful algebraic properties that underlie MATLAB's shape semantics.

9. The methodology of claim 8, wherein the algebraic properties can be used for various compile-time optimizations such as reducing array conformability checking and allocating memory in advance.